

Expert Declaration of
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NERA Economic Consulting

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1. Qualifications

1.1. Qualifications

1. I, Jeff D. Makholm, Ph.D., pursuant to 28 U.S.C. § 1746, declare and state as follows:
2. I am a Managing Director at National Economic Research Associates, Inc. (“NERA”). NERA is the world’s oldest and largest firm of consulting economists, founded in 1961, with offices in cities around the world. I have been with NERA since 1984. My business address is 200 Clarendon Street, Boston, Massachusetts, 02116. I have M.A. and Ph.D. degrees in economics from the University of Wisconsin-Madison, with a major field of Industrial Organization and a minor field of Econometrics/Public Economics. The title of my 1986 Ph.D dissertation is “Sources of Total Factor Productivity in the Electric Utility Industry.” I also have B.A. and M.A. degrees in economics from the University of Wisconsin-Milwaukee. Prior to my latest full-time consulting activities, I was an Adjunct Professor in the Graduate School of Business at Northeastern University in Boston, Massachusetts, teaching courses in microeconomic theory and managerial economics.
3. My work involves pricing, regulation and market issues for regulated and competitive infrastructure industries, including electricity, natural gas, water and telecommunications utilities, natural gas and oil pipelines, airports, toll roads and passenger and freight railroads. More specifically, I have consulted for firms, governments, regulatory agencies or interest groups on the issues of competition, rate/toll design, cost of capital, regulatory rulemaking, incentive ratemaking, load forecasting, least-cost planning, cost measurement, contract obligations, bankruptcy and economic damages. As shown in Exhibit JDM-1, my Curriculum Vitae, I have prepared expert testimony, reports and statements, and have appeared as an expert witness on more than 250 occasions in a number of countries, including before U.S. District Courts, regulatory commissions and Parliamentary panels and international arbitral panels.
4. I have directed studies on behalf of energy companies, governments and the World Bank in many countries, where I have drafted regulations, established tariffs, recommended financing options for major capital projects, advised on industry restructurings, and assisted

in the privatization of state-owned utilities and infrastructure businesses. I have extensive experience in Latin America with regulation, privatization and pricing and in arbitrations of disputes involving problems with privatized franchises. I participated in the privatization of public utilities and intercity railroads in Argentina, the pre-privatization restructuring of gas utilities in Bolivia and the drafting of gas services legislation in Chile. In 2015, I analyzed and provided a report for Colombia's energy regulator regarding proposed electricity sector regulations on behalf of Colombia's independent power generator's association.

5. In addition to my other work I have provided evidence many times, before state and federal regulators, on the cost of capital for public utilities and other regulated service providers in the United States and other countries. Such work involves applying accepted financial models to firm and market data to derive reasonable conclusions about investor expectations and the cost of capital. I have provided sworn testimony regarding the cost of capital for such companies before the Federal Energy Regulatory Commission (FERC), the Federal Communications Commission (FCC) and before regulatory commissions in about half of the states in the United States. I have published papers on the subject of the cost of capital and financing for public utilities and public-private partnerships for public service enterprises.
6. Also, in addition to my other work, and as mentioned above, I have been involved in the study and application of the analysis of utility productivity for more than three decades. For my doctoral work in the 1980s, I performed the first scholarly investigation into the measurement and econometric investigation of the sources of productivity growth of electric utilities—the model for empirical productivity growth research and application for incentive regulatory plans for electric utilities around the world. I have performed such productivity studies used to set regulated tariffs for energy utilities in Canada, the United States, New Zealand, Mexico, and Argentina. My methods and data stemming from my original research are in current use to derive productivity growth parameters affecting regulated electricity prices in the United States and Canada. I have also published papers about the useful measurement of utility productivity for regulatory purposes.
7. I was actively involved in the worldwide wave of utility privatizations that followed when the U.K. government of Margaret Thatcher started its privatization effort in the 1980s. I

worked in many countries to help to create, restructure, and/or regulate investor-owned utilities being created out of government-owned utility departments. In the process, I worked directly with many utility operations in North and South America, Europe, Australia, Africa, New Zealand, Russia and China.

8. I publish extensively on economic issues involving infrastructure and energy industries. In the past 10 years, I have published more than 30 papers in refereed journals, edited collections of papers in book form, other journals and trade publications. I published one monograph: *The Political Economy of Pipelines*, at the University of Chicago Press in 2012 (released in Chinese by Beijing's Petroleum Institute Press in 2016) that, among other things, charted the history of the growth of investor-owned utility enterprises in the United States (a part of U.S. industrial history that did not extend to Puerto Rico). My publications include subjects relevant to my report in this case, including the financing, operation, administration and regulation of electric utilities, which affect how the capital markets provide the uninterrupted flow of capital needed for such utilities to serve their public safely and economically.
9. My time is charged at \$675 per hour. Senior Consultants and Analysts working under my direction are charged at between \$310 and \$525 per hour. Compensation to NERA on this matter does not depend in any way on the nature of my findings or the outcome of this case.

1.2. Assignment

10. I have been asked by Counsel for National Public Finance Guarantee Corporation, Assured Guaranty Corp., Assured Guaranty Municipal Corp., and Syncora Guarantee, Inc. (collectively, "Movants") to provide an opinion on whether the evidence justifies the immediate appointment of a receiver for PREPA to advance the interests of all of PREPA's stakeholders. Such stakeholders include: (1) ratepayers in Puerto Rico; (2) PREPA, in being able to exit bankruptcy while regaining access to the capital markets on reasonable terms; (3) current bondholders, to protect the value of their collateral and to expect repayment over a reasonable time, and (4) future public-private partners ("P3" concessionaires) who themselves require consistent and steady access to capital markets to provide electric utility services to Puerto Rico on reasonable terms.

11. In my opinion, the immediate appointment of a receiver is justified, and should serve the interests of all stakeholders, not only for the reasons set forth in Ms. Ringelstetter Ennis's declarations,¹ but for many others as well. I understand that under the terms of the Trust Agreement and the laws of the Commonwealth of Puerto Rico, the Movants, a group of PREPA bond insurers, have the right to apply for the appointment of a receiver in the event of default.²
12. PREPA is currently in a general state of insolvency and extreme distress, flowing from a building series of governance, financial and operational problems that caused it to lose access to capital markets in 2014—long before Hurricanes Irma and Maria in September 2017.³ As a result, PREPA is in a form of bankruptcy under PROMESA Title III. PREPA and all parties in interest are thus looking for a path for PREPA to emerge from its current distress, aided perhaps by the utilities short-listed to bid for PREPA's transition to operation by an experienced U.S. or Canadian utility as part of a future P3 concession.
13. Regarding background to this assignment, I refer to paragraphs 6 through 8 of the Declaration of NERA's Sandra Ringelstetter Ennis dated October 3, 2018.
14. The materials considered in the preparation of this report are listed in Exhibit JDM-4.

2. Summary of Findings

15. PREPA's current distress is highly unique for major utilities subject to the jurisdiction of American statutes and practices relating to the operation and regulation of electric companies—either investor-owned or publicly-owned. The dominant form of industrial formation for such utilities in the United States is investor-ownership—a form of organization flowing from nineteenth-century business practices and confirmed and solidified in the early twentieth century by legislative actions in the states with important

¹ Declaration of Ms. Sandra Ringelstetter Ennis, October 3, 2018, attached as Exhibit JDM-2 ("Ringelstetter Ennis Decl."); Declaration of Ms. Sandra Ringelstetter Ennis, February 25, 2019, attached as Exhibit JDM-3 ("Supp. Ringelstetter Ennis Decl.").

² See Trust Agreement between PREPA and U.S. Bank N.A., as Successor Trustee ("Trustee"), as amended and supplement § 804, dated January 1, 1974 (requiring Trustee to proceed for the appointment of a receiver upon written request of the holders of 25% or more of the principal amount of Bonds outstanding); Puerto Rico, 22 L.P.R.A. §207 Right to receivership upon default.

³ See 2014 Puerto Rico Laws Act 57 (S.B. 837), (codified at P.R. Laws Ann. tit. 22, § 1051); Public Law 114-187, 114th Congress.

complementary actions by Congress and the Supreme Court. The major government-owned exceptions to the dominant organization of major utilities, as shown in Ms. Ringelstetter Ennis's evidence, are themselves the product of specific historical circumstances (often stemming from government water projects), enabling legislation and important controls, including stable, credible governance (including accounting, administration and reasonable reporting to legislative authorities).⁴

16. PREPA is evidently not subject to those kinds of controls—all of which embody, in some form, the idea that government control of utilities, whether privately or publicly owned, is somehow subject to the kind of legislative checks and balances that generally occur in state and federal jurisdictions. From a broad perspective of the worldwide organization of utilities, PREPA appears much closer to the type of state owned and operated utility franchises, effectively controlled by the state's executive authority, that exist without effective independent regulation or responsible bureaucratic control. Such utilities, subject to such kinds of inefficient (or even irresponsible and wasteful) control were targets of the wave of utility privatizations that occurred in the 1980s and 1990s throughout the world—a wave that bypassed Puerto Rico.
17. Utilities like PREPA are unique among the wider array of industrial enterprises in that they have cost structures that naturally tend to defeat discipline by competitive markets—precisely why monopoly utilities are regulated. Utilities need uninterrupted access to capital to provide their customers safe, adequate and reliable service. Investor-owned utilities must attract funds from capital markets. Publicly-owned utilities can either attract such funds from capital markets or allocate funds from government sources. PREPA has lost its own credit and access to capital markets, and the Government of Puerto Rico is bankrupt—meaning it has also lost its credit and ability to raise funds in the market for PREPA.
18. The capital markets that provide funds to American utilities, whether privately or publicly owned, have long relied on transparent methods of accounting, administration and (for private utilities) regulation to chart the reliable repayment of their capital. Such methods of

⁴ Ringelstetter Ennis Decl., Exhibit 6.

control have never been applied to PREPA—which is plainly evident from PREPA’s pattern of non-compliance with its regulator. In multiple ongoing regulatory proceedings—including the Fiscal Year 2019 rate case (the “current rate case”), the microgrid interconnection regulation case, and the Integrated Resource Plan (IRP) case—PREPA has defied the Energy Bureau’s orders, refused to produce critical documents, and sought numerous time extensions amounting to months of delays.⁵ Another example of this non-compliance is PREPA’s prior rate case, which culminated in a January 2017 final order setting rates (the “prior rate case”). That regulatory case was unlike the type of regulatory cases for other U.S. utilities. It demonstrated many examples of obstruction and attempts by PREPA at self-justifying behavior that are nowhere typical of the kind of rate proceedings that happen before U.S. regulators.⁶ Those other U.S. rate proceedings serve as formal and meticulous dispute resolution procedures that seek ways for the interests of utilities and their consumers to interact to serve the interests of both without undue contention. PREPA’s various regulatory cases show no overall evidence of that type of function of utility regulatory cases that exist elsewhere in the United States.

19. PREPA is, in my opinion, clearly not a candidate to self-manage an orderly evolution to a structure and operation that will permit it to regain its access to credit. It needs to project to the capital markets and other stakeholders credibility, transparency and operational professionalism. It needs a rapid disconnection from direct political authority and influence, and self-serving internal management control, which the Title III process can permit by allowing bondholders and bond insurers to pursue the appointment of an independent receiver.⁷
20. The appointment of a receiver for PREPA will permit the orderly imposition of a disinterested process of administration, accounting, finance and ratemaking required for PREPA to project transparent and effective operation and the reasonable ability to raise

⁵ See Supp. Ringelstetter Ennis Decl., Section IV.B.

⁶ Ibid. ¶ 66 (describing four requested extensions and 21 months of delays in implementing the 2017 permanent rate).

⁷ Ibid. Section IV.C.

revenues consistent with its obligations—as other U.S.-based utilities do, whether investor-owned or publicly-owned.

21. The appointment of a receiver will also raise the public transparency, and lower the risk, perceived by the short-listed bidders for the P3 transmission and distribution concession, as well as that perceived by future bidders for PREPA's generation assets—permitting higher bids from private parties on PREPA's generation assets (resulting in more value for PREPA), and better deals to be struck in the transmission and distribution concession (also resulting in more value for PREPA's stakeholders), and by extension, lower prices for consumers.⁸
22. In particular, there would be immediate benefits to the appointment of an administrative receiver to operate PREPA free from the political and management control that have evidently contributed to much of PREPA's current distress. Specifically, a receiver would increase efficiencies and reduce the cost of electricity, facilitate the receipt of receiving federal funds, ease the burden for current PREPA bondholders and bond insurers as evidenced by the current non-performance on their loans, signal to the capital market that a new and much more credit-worthy regime is in place, and facilitate PREPA's exit from Title III restructuring.⁹
23. A receiver would also improve reporting to the Federal Oversight and Management Board (FOMB). I understand that PREPA has not been complying with the reporting obligations under PROMESA.¹⁰ A receiver would be far better equipped to interact responsibly with the FOMB than is PREPA today.
24. I understand that there are issues and contentions in this proceeding regarding bondholders' collateral with PREPA. Mr. Robert A. Lamb lists in his Declaration the elements of the

⁸ SK E&S Response to Market Sounding Questionnaire (June 18, 2018) at R00005479 ([REDACTED]); Arctas Response to Market Sounding Questionnaire (June 18, 2018) at R00005492 ([REDACTED]).

⁹ See Supp. Ringelstetter Ennis Decl., Section V.D (describing numerous risks of PREPA failing to receive federal funds because of mismanagement).

¹⁰ Supp. Ringelstetter Ennis Decl., ¶¶ 86-90.

PREPA Trust Agreement that the financial markets recognize as pledged security interests, which conform to my general knowledge and expectations regarding how utility bondholders assure their interests.¹¹ The “collateral stack” includes a lien on revenues, rate covenants, and collections covenants.¹² Against such specific and reasonable collateral definitions, I understand that PREPA has contended that purported zero net revenues for PREPA means that existing revenue pledges and covenants have no value.¹³ Part of the evidence in this case, particularly the evidence of my colleague Dr. David Tabak, shows that with the type of lower, risk-adjusted capital costs reflective of the actions of an independent receiver, the present value of PREPA is many billions of dollars greater.¹⁴ Dr. Tabak shows, without endorsing the assumptions underlying the PREPA Fiscal Plan, how a change in risk produces such value.¹⁵ Such is what I would expect to see with transparent and responsible leadership and operation of an electric utility like PREPA. Thus, it is erroneous to draw conclusions about the value of collateral and covenants by reference to PREPA’s current mismanagement and distress—a root cause of any revenue shortfalls it may display. It is self-evident that PREPA would produce considerable value if it is reasonably well-run and governed in accordance with professional industry practices—exactly the job that an administrative receiver would perform in this case. That value

¹¹ Declaration of Mr. Robert A. Lamb, October 3, 2018, pp. 12-13.

¹² Proof of Claim of Assured Guaranty Corp. in the United States District Court for the District of Puerto Rico, 24 May 2018; Proof of Claim of Syncora Guarantee Inc. in the United States District Court for the District of Puerto Rico, 20 June 2018; Proof of Claim of National Public Finance Guarantee Corporation in the United States District Court for the District of Puerto Rico, regarding Puerto Rico Electric Power Authority Power Revenue Bonds, Series LL, NN, RR, TT and Puerto Rico Electric Power Authority Power Revenue Refunding Bonds, Series MM, PP, SS, UU, and VV, 25 May 2018; Proof of Claim of National Public Finance Guarantee Corporation in the United States District Court for the Court of Puerto Rico, 25 May 2018; Proof of Claim of National Public Finance Guarantee Corporation in the United States District Court for the Court of Puerto Rico, Puerto Rico Electric Power Authority Power Revenue Bonds, Series 2016A, 2016B, and 2016C, 25 May 2018.

¹³ Financial Oversight and Management Board, Brief for Debtor-Appellee Financial Oversight and Management Board for Puerto Rico as Representative of Puerto Rico Electric Power Authority, United States Court of Appeals for the First Circuit, 6 April 2018; Financial Oversight and Management Board, Urgent Motion of Financial Oversight and Management Board, as Representative of Debtor, to Compel Production of Documents from Movants relating to their Motion of Relief from Automatic Stay, United States District Court for the Court of Puerto Rico, 7 February 2019.

¹⁴ Declaration of Dr. David Tabak, February 25, 2019, attached as Exhibit JDM-5.

¹⁵ PREPA, “Puerto Rico Electric Power Authority Fiscal Plan,” August 1, 2018.

includes margins above PREPA's costs and positive net revenues, coupled with more efficient and reliable operation for consumers.

3. PREPA Needs a Receiver to Reconnect to Capital Markets

25. Electric utilities, whether government-owned (like PREPA) or investor-owned (like the short-listed utilities under Puerto Rico's P3 concession plan), require uninterrupted access to capital markets to build and maintain the infrastructure assets that modern electricity service requires. This "capital attraction" standard, in the competitive capital markets, has long been first among the criteria of what constitutes reasonable charges for utility service in the United States.¹⁶ That capital attraction standard matters for the business of setting PREPA's rates (now and in the future), preserving creditors' collateral, and assuring the capital markets that their paid-in capital will be returned.
26. Put another way, and in terms important to this proceeding in my view, the rates that PREPA charges now, or that its prospective P3 concessionaire successor will charge in the future, are a function of costs—critically including the cost of acquiring capital.
27. Reliable, grid-served electricity is one of the great advances of the industrial age. But collecting the capital necessary to construct and maintain the infrastructure assets to provide safe and reliable grid-served electricity service, while at the same time recognizing the public service aspects of such an industry and the need to protect consumers from monopoly control in the industry, has been a unique challenge. That challenge required sustained U.S. legislative and judicial action for much of the first half of the twentieth century to sort out the various institutions needed to permit the industry to attract its needed capital from the market while also respecting the interests of consumers of public services.¹⁷
28. Whether to organize such industries with privately-owned firms or publicly-owned firms revolved around the issue of attracting capital. The United States has a unique industrial and judicial history in this respect which, throughout the nineteenth and early twentieth

¹⁶ Bonbright, J.C., *Principles of Public Utility Rates*, Columbia University Press, New York (1961), p. 152-53.

¹⁷ Such history is part of my book, *The Political Economy of Pipelines*, pp. 7-9, 16-28, 45-77, 88-93, 97-152.

century, created an electric utility industry dominated uniquely by investor-owners. The institutions created to permit effective governance and regulation of the industry, so as to both facilitate raising capital and protect consumer interests, are key both to solve PREPA's immediate problems and to facilitate the most successful P3 concession. The companies on the short list for the PREPA P3 concession know those institutions and for many decades have operated successfully with them. The risk they perceive in the P3 concession program will be smaller if they recognize the same types of institutions at work—or at least credibly developing—in Puerto Rico.¹⁸

29. The dominant role of private ownership of regulated electricity companies was studied and confirmed by a major and newsworthy national task force, including such figures as future U.S. Supreme Court Justice Louis Brandeis and utility holding company pioneer Samuel Insull, which sought to determine the wisdom of continuing the use of private capital for the building and operation of regulated utilities. The study represented a lasting confirmation of the role of private capital in U.S. regulated businesses.¹⁹
30. Confirming the dominance of investor-owned utilities in the United States was one matter; creating a reasonable way to value their capital and preserve their credit was another. The United States Supreme Court wrestled with preserving utility credit unsuccessfully until finally settling the matter in 1944—when the Court dealt with the question of how to value regulated property and established precedent for all regulated enterprises in the United States.
31. Throughout the 1920s and 1930s, economists and legal scholars had struggled with the question of how to value regulated property—even to the point of speculating that public ownership might be the only way out of the difficulties arising from the lack of any

¹⁸ See *supra* n.7.

¹⁹ *Municipal and Private Operation of Public Utilities* (three volumes), National Civic Federation, New York (1907). The National Civic Federation investigating committee spent six months intensively studying dozens of publicly-owned and investor-owned utilities in the U.S. and U.K. with the goal of settling the issue of whether private or public ownership was in the nation's best interest. In recommending against public ownership, the committee's report helped shape a future of investor-owned utilities in the United States.

meaningful economic definition of “fair value” for the property of regulated public utilities.²⁰

32. The Supreme Court itself had failed over the course of half a century to grasp the nettle regarding where the value of that property comes from for setting the charges for utility services. The Court settled the matter in a decision in 1944, regarding *Hope Natural Gas Company*, where it judged property values, and hence returns, in terms of the ability of utilities to support credit-sustaining revenues for their owners—as judged by those returns in the capital markets:

From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock . . . [T]he return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and attract capital.²¹

33. That decision secured utility companies’ investments from seizure (a “taking” of private property without due process) if regulators set charges to award returns consistent with investors’ opportunity cost of the equity capital invested in regulated enterprises.
34. The Supreme Court’s *Hope* decision made acceptable utility rates a function of capital costs. Those economists who lived through the issues leading to that judgment vied with each other to memorialize its importance. James Bonbright, the most eminent economist from the perspective of the long-unresolved problem in dealing with utility capital (simultaneously a professor of law at Columbia University and economics at Harvard), called it “one of the most important economic pronouncements in the history of American law.”²²

²⁰ “[H]ad the [Supreme] Court deliberately set out to defeat the whole purpose of regulation and to make public ownership inevitable, it would hardly have pursued this objective more effectively than by its rulings and dicta on valuation.” Bonbright, J.C., *The Valuation of Property*, Volume II, McGraw-Hill Book Company, New York (1937), p. 1154.

²¹ *Federal Power Commission et al v. Hope Natural Gas Co*, 320 U.S. 591, 603 (1944). (Douglas J.)

²² Bonbright, J.C., “Utility Rate Control Reconsidered in the Light of the *Hope Natural Gas Case*,” *The American Economic Review*, Vol. 38, No. 2. (1948), p. 465.

35. With the *Hope* decision, the creditworthiness of U.S. utilities became a function of the ability of investors and lenders to expect those utilities to charge compensatory rates—driven by the cost of providing services, including the market’s opportunity cost of capital. To the extent that lenders held “collateral” in utilities, it comprised the pledge of revenues and reliance on those institutions that assured that regulation would serve to maintain such credit-sustaining revenues. I will describe those institutional elements more fully in the next section.

4. **A Receiver Would Move to Embrace the Essential Institutions of Effective U.S. Regulation**

36. The U.S. regulated utility model represents, at its core, an evolution of institutions to deal with promoting *orderly action* where the *private interests* of utility owners intersect with the *public interest* at large.²³ Those institutions of U.S. regulation serve to harmonize relations between parties who are otherwise in actual or potential conflict, with the purpose of promoting an orderly and reliable business.²⁴

37. Those U.S. regulatory institutions evolved over time; a product of public opinion, legislative action and judicial precedent. This is no exhaustive historical list of the institutions that make up the U.S. regulatory model—but I consider the following events and actions to be reasonably reflective of the parameters of modern U.S. regulation:

- Private capital for U.S. infrastructure as a reaction to failed public investments. The uniquely American track toward private investment in public infrastructures services, rather than the public financing evident in most of the rest of the world, came with the failure of early 19th century canals. The depression of **1839-1842** left New York and other states needing to raise taxes to pay off Erie Canal bonds.²⁵ Thereafter, both public opinion (as expressed in state legislatures) and

²³ Makhholm, J.D., “The REVolution yields to a more familiar path: New York’s Reform the Energy Vision (REV),” *The Electricity Journal*, 29 (2016), pp. 48-55.

²⁴ See Williamson, O.E., *The Economic Institutions of Capitalism*, Free Press, New York (1985), p. 3.

²⁵ The Erie Canal was critical in opening up the “Northwest Territories” of the early nineteenth century (i.e., Illinois, Indiana, Michigan and Ohio) to East Coast markets. Begun in 1817 and completed in 1825, the canal linked Lake Erie on the Great Lakes to the Hudson River that flowed to New York City. The Erie Canal was key to making New York City the most important trading and finance city in the world—a position it still holds.

the investment community looked to harness private capital for major infrastructure and utility investments.²⁶

- Confirmation of the role of investor-owned utilities in the United States. By **1905**, the growth of private U.S. utilities compared to public U.K. utilities led the National Civic Federation (a prominent civic research group) to study which path was wise to pursue further in America. The study found that different public attitudes toward private enterprise and public administration in the U.S. and U.K. meant greater acceptance of continued private ownership in the U.S., even if public ownership was more dominant in the U.K.²⁷
- New legislation to deal with investor-owned utilities. Drawing from the Civic Federal study, Wisconsin and New York passed new regulatory laws in **1907** that served as the model for other states.
- Public transparency of private-public service firms. In **1912**, the Supreme Court first ruled that accounting systems for privately-owned public utilities were public matters.²⁸
- Congress acts to regulate accounting. Congress's Natural Gas Act of **1938** was the first legislation to mandate the Uniform System of Accounts—an accounting system that, particularly for electric utilities, is unique in the world.²⁹
- The Supreme Court defines the value of regulatory property under the U.S. Constitution. In **1944**, the Supreme Court decided *Federal Power Commission et al. v. Hope Natural Gas Co.*³⁰ With the *Hope* ruling, the Supreme Court held that the 5th and 14th amendments of the U.S. Constitution required that, in setting permissible revenues, a utility's profit (resting on invested capital as reflected in accurate bookkeeping) would be measured by potential earnings for investors based on other enterprises of similar risk. The *Hope* decision secured utility companies' investments from seizure (a "taking" of private property without due process) if regulators set charges to award returns consistent with investors'

²⁶ Davis L.E., and North, D.C., *Institutional Change and American Economic Growth*, Cambridge University Press, Cambridge (1971), pp. 77-79, 139-143. Even the state of New York had trouble raising the \$7 million for a canal that was 363 miles long, 20 feet wide and 4 feet deep, with a rise of 630 feet and a drop of 62 feet from the Hudson River to Lake Erie.

²⁷ *Municipal and Private Operation of Public Utilities* (three volumes), National Civic Federation, New York (1907). See: Munro, W.B., "Review: The Civic Federation Report on Public Ownership," *Quarterly Journal of Economics*, Vol. 23, No. 1 (1908), pp. 161-174.

²⁸ Troxel, E., *Economics of Public Utilities*, J. J. Little and Ives Company, New York (1947), 120, n.4, citing *Interstate Commerce Com. V. Goodrich Transit Co.*, 224 U.S. 194, 211 (1912).

²⁹ Federal Power Commission, *Uniform System of Accounts for Public Utilities and Licensees*, Jan. 1, 1937.

³⁰ The Hope Natural Gas Company was a Standard Oil Company gas pipeline subsidiary that filed suit against the FPC over its first ruling under the Natural Gas Act of 1938.

opportunity cost of the equity capital invested in regulated enterprises as recorded in those enterprises' books.

- Congress legitimizes Commission regulation action. During the 1930s, legal scholars studied the legality of utility regulation's growing impact on the value of investor property. Regulators appeared to have a degree of discretion that seemed to violate the U.S. Constitution's prohibition of the taking of property without due process. Congress addressed these issues by passing the Administrative Procedures Act of **1946**, which laid out procedures to assure Constitutional due process in regulatory decision making (including timing limits, the need to act upon evidence, the ability of witnesses presenting that evidence to be cross-examined, and many other aspects of the work of regulators).³¹

38. Some of the institutions were invented and imposed to protect investor property (like the *Hope* decision and the Administrative Procedures Act). Others were invented to give regulators the tools needed to do their jobs effectively (like the Uniform System of Accounts). In all, however, these institutions gave U.S. regulators the ability to manage a regulatory process consistent with the orderly operation and financing of America's utilities.

39. In this case, the Puerto Rico Energy Commission (PREC) was the independent and specialized body created by Act 57-2014, as amended, in charge of regulating PREPA.³²

40. Although PREC was succeeded by a new energy regulator, the Puerto Rico Energy Bureau (PREB), PREC was described in Act 57-2014 as follows (my underlining):

The Energy Commission created herein shall be the key component for the faithful and transparent execution of the Energy Reform. It shall be an independent government entity in charge of regulating, overseeing, and ensuring compliance with the public policy on energy of the Commonwealth of Puerto Rico.

A key mission of the Energy Commission shall be to evaluate the plans that PREPA is required submit to the new regulatory entity, in accordance with the provisions of this Act. ... By evaluating and following up on these plans, the Energy Commission shall be able to guarantee the orderly and integrated development of our electrical system, thus ensuring the reliability,

³¹ Administrative Procedure Act (APA), Pub.L. 79-404, 60 Stat. 237. Former Senator Moynihan (Democrat – New York) discussed the historical and political origins of the Administrative Procedures Act. *See*: Moynihan, D. P., *Secrecy: The American Experience*, Yale University Press, New Haven, Connecticut (1998).

³² Puerto Rico Energy Transportation and RELIEF Act of May 27, 2014, No. 57 (codified at P.R. Laws Ann. Tit. 22 § 1051) ("Act 57-2014"). Chapter VI, Subchapter B, of Act 57-2014 lays out the responsibilities of PREC (which has now become the Puerto Rico Energy Bureau).

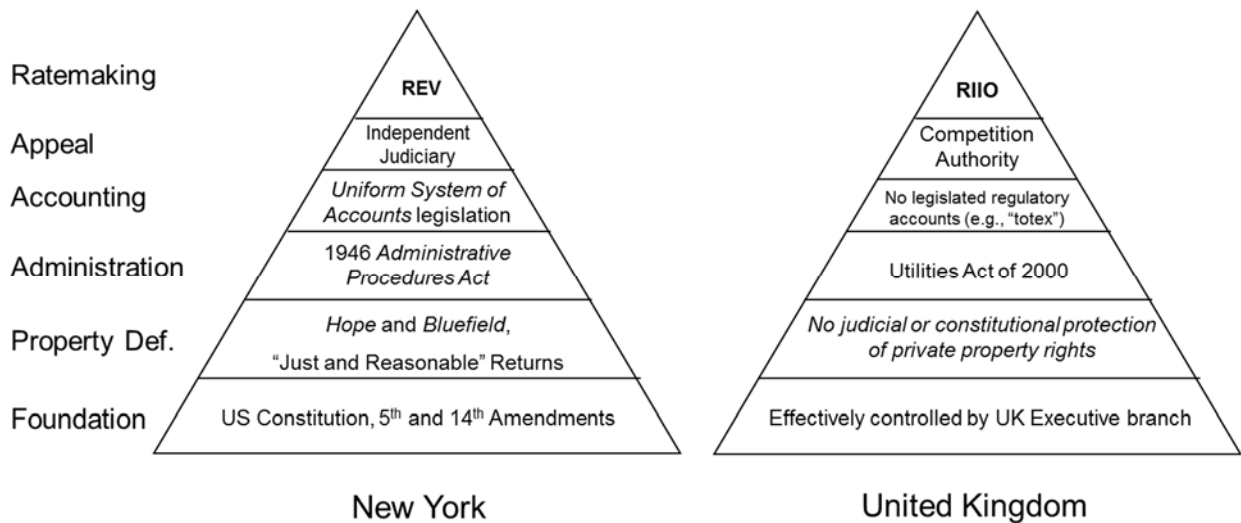
efficiency, and transparency thereof, and the provision of electric power services at reasonable prices.

The Energy Commission shall use as model the structure of energy commissions established in European and Latin American countries and of the public utilities regulatory commissions established in various states of the United States. This Legislative Assembly understands that there is a compelling need to take immediate action to improve our electrical system through the creation of a specialized regulatory entity with the resources and expertise needed to supervise this effort. The Energy Commission shall be subject to the Legislative Assembly's strict scrutiny in order to ensure that it fully complies with its duties and responsibilities. If the Commission properly carries out its mandate, the Legislative Assembly may consider attaching or merging it with other public utilities regulatory commissions already existing in the Island. This formula of establishing independent regulatory commissions and subsequently merging their jurisdictions with those of other industries has been the standpoint of other countries such as Spain, Ireland, and Italy.³³

41. An issue inherent in referencing other countries, as the statutory language quoted above does, is that their regulatory institutions are generally different than those in the United States. For example, the United Kingdom has its own regulatory authority—but it is constituted on a far different basis, with much greater powers in some areas and not in others, than its U.S. regulatory counterparts. I recently compared U.S. and U.K. regulation with the following chart in an *Electricity Journal* paper:³⁴

³³ 2014 P.R. Laws 57, Regulations, as amended.

³⁴ Makholm, J.D., "The REVolution yields to a more familiar path: New York's Reform the Energy Vision (REV)," *The Electricity Journal*, 29 (2016), p. 51.



42. Representing these two regulatory systems as pyramids simplifies matters by suggesting that they provide a similar sort of foundation. The foundations for these two examples of regulation are indeed very different. The greatest difference is the history of these two systems: it has been over 75 years since the U.S. Congress mandated strict accounting standards, 65 years since it specified exacting administrative methods to preserve the constitutionality of regulatory actions, 70 years since the Court defined what regulated private property meant, and over 100 years since the Court ruled that the public owns the books and records of private utilities (*not* the shareholders). None of these institutions apply to the U.K.
43. Everything in the right-hand pyramid is somewhat of a work in progress—as the U.K. has only regulated its utilities since the time of the Margaret Thatcher government. Thus, if the U.K.’s electricity regulator’s (Ofgem’s) board members were transferred from London to any state in the United States, the members would find themselves, in their eyes and based on their own experience, straightjacketed by legal due process (in ways they are unused to), overwhelmed by meticulous quantitative data and evidence (flowing from a long-accepted accounting system they do not know), confronting evidence from adverse parties with a legal standing in the United States, and immune from the direct influence of the state’s Governor. That is to say, those U.K. regulators would find themselves in an institutional environment with which they are quite totally unfamiliar. My point here is that utility regulation is not a generic pursuit that works the same way everywhere—it rests on

particular institutions that nations create to solve particular problems. In this respect, the precepts and standards embodied in U.S. regulation are particularly well-advanced and suitable for PREPA—if the appointment of a receiver is permitted to invoke them effectively.

44. To a major degree, the proliferation of examples of different countries by which to suggest a regulatory regime is a signal of a lack of specificity in what measures would govern such a regulator effectively in the specific case of PREPA. A receiver would not be so unfocussed—instead, it would impose the normal, tried and true standards used by institutions of U.S. regulation to create a transparent and more responsible utility.
45. In reading the 2017 findings of PREC in the prior rate proceeding, it was evident to me that the regulator was trying its best in the face of great and unreasonable obstructive behavior by PREPA.³⁵ That agency was, in a sense, fighting the good fight and evidently trying to preserve its independence. Independence is the signal of effective regulatory authorities around the world, as widely recognized by economists studying the matter of effective regulation.³⁶ From the date of PREC’s inception until the summer of 2018, PREC had three Commissioners—Ángel R. Rivera de la Cruz, José H. Román Morales and the Chairman Agustín F. Carbó-Lugo (until his resignation in April 2017, at which time José H. Román Morales became the interim Chair). During this period, PREC orders were generally critical of PREPA and clear about the need for fundamental changes to PREPA’s management and operations.³⁷ On August 13, 2018, Governor Ricardo Rosselló signed House Bill 1408 into law and consolidated PREC under the umbrella of the Public Service Regulatory Board (JRSP).³⁸ PREC was renamed the Puerto Rico Energy Bureau (PREB) and José H. Román Morales was replaced by Edison Avilés-Deliz as the Chair of the new organization. The number of Commissioners increased to five. Today, only one Commissioner from the

³⁵ See CEPR-AP-2015-0001. See also Supp. Ringelstetter Ennis Decl., Section IV.B.

³⁶ See Levy, B. and Spiller, P.T., “The Institutional Foundation of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation, *Journal of Law, Economics and Organization*, Volume 10, Issue 2, 1 October 1994.

³⁷ See, e.g., CEPR-AP-2015-0001, “Final Resolution and Order,” Puerto Rico Energy Commission, January 10, 2017 (“PREC Order 2017”).

³⁸ “Energy Commission consolidated under a new umbrella,” *El Nuevo Día*, August 14, 2018.

former PREC—Ángel R. Rivera de la Cruz—serves as a Commissioner of PREB.

Unfortunately, PREB does not seem to have retained its independence—to the further detriment of any reasonable regulatory authority over PREPA.

46. To make matters worse, PREPA's current management has resisted its regulator on a consistent basis.³⁹ PREB presides over three regulatory proceedings related to the determination of rates for PREPA: the prior rate case initiated by PREC in May 2015,⁴⁰ a proceeding that deals with the implementation of such rates ordered by PREC,⁴¹ and the current rate case initiated by PREB in May 2018.⁴² In each of these cases, PREPA has displayed a pattern of non-compliance with its regulator. As I describe further below, in the prior rate case, PREPA exhibited obstructive and self-justifying behavior. In the rate implementation case, PREPA has requested numerous time extensions (including on PREPA's own suggested deadlines), to the point that PREB has issued a final warning to PREPA regarding any further delays, threatening it with fines of up to \$25,000 per day if it cannot timely implement the permanent rates in a timely manner.⁴³ In the current rate case, PREPA began by attempting to effectively dismiss the case, then refused to produce certain critical information, and now has proceeded to request numerous time extensions. Despite an original deadline of summer 2018 and the expiration of over half the Fiscal Year, Fiscal Year 2019 rates still have not been set, nor has PREPA's revenue requirement been determined.⁴⁴

47. PREPA's pattern of non-compliance with its regulator is not limited to the rate proceedings.⁴⁵ In its Integrated Resource Plan (IRP) case, PREPA has also repeatedly requested time extensions (including on its own suggested deadlines), to the point that PREB resorted to fining PREPA and stating that PREPA's delays were harming its

³⁹ Supp. Ringelstetter Ennis Decl., Section IV.B.

⁴⁰ CEPR-AP-2015-0001.

⁴¹ NEPR-AP-2018-0003.

⁴² CEPR-AP-2018-0002.

⁴³ Supp. Ringelstetter Ennis Decl., ¶ 66.

⁴⁴ Ibid., ¶ 62.

⁴⁵ Ibid., Section IV.B.

credibility and stakeholders.⁴⁶ Relatedly, PREPA attempted to circumvent the IRP process by issuing a Request for Proposal (RFP) for conversion of two turbines to natural-gas-burning capability without first notifying PREB—despite the fact that PREPA was required by regulatory law to do so. PREB was forced to open a special proceeding to investigate PREPA’s non-compliance in this regard. Finally, in a proceeding to create a draft microgrid interconnection regulation—a critical prerequisite for PREPA’s contemplated energy sector transformation—PREPA has repeatedly refused to comply with PREB’s orders, instead submitting argumentative briefs alleging that the proceeding is improper in various ways.⁴⁷ There too, PREPA has missed deadlines and PREB has had to issue an order to show cause as to why PREPA should not be fined for its non-compliance.⁴⁸

5. PREPA Is Beset by Political Risk, Obstruction and Self-Justifying Behavior that a Receiver Would Work to Cure

48. I described in Section 4, above, the elements of accounting and reliable administrative procedures that permit those who provide capital to regulated U.S. utility enterprises the ability to be reasonably assured that costs will somehow be reflected in prices—which will reflect the cost of capital—and how a receiver would utilize similar tools and standards to immediately improve the situation for PREPA and its stakeholders.

49. I have reviewed in detail the final resolution of the prior rate case—commencing in 2014 and ending in 2017. Exhibit JDM-6 lists 20 specific areas of obstructive or self-justifying contention between PREPA and its then-regulator PREC. I will describe in the following paragraphs specific instances of this and why such behavior is not in any way representative of the type of contention typical of regulatory proceedings in the various U.S. states or before federal regulatory agencies. Of course, as indicated in Section 4 above, the prior rate case is just one of many examples of PREPA’s pattern of non-compliance with its regulator, which continues in multiple different proceedings to this day.

⁴⁶ Ibid., ¶ 78.

⁴⁷ Ibid., ¶¶ 72-73.

⁴⁸ Ibid., ¶ 72.

50. I include in Exhibit JDM-6 keywords that reflect the dysfunction apparent in that proceeding—compared to what I would expect from a regulatory agency dealing with a well-run, transparent and responsible utility (e.g., plainly irrelevant evidence, failure to produce documents, objective argumentation, etc.). But I would draw attention to some particularly troublesome PREPA actions.
51. One includes the presentation of a “benchmarking” study by Dr. Larry Kauffman—an economist I know well, as the work he presented involves the statistical benchmarking of utility productivity for which my doctoral dissertation is the first scholarly example (as I described earlier). PREC, in choosing to highlight at length the valueless nature of that evidence, did not explicitly fault Dr. Kauffman—but it sharply criticized PREPA’s counsel for producing such expensive (and totally irrelevant) benchmarking, which failed even to recognize PREPA’s far worse quality of service (a factor for which Dr. Kauffman did not adjust).⁴⁹ PREPA merely used that study to try to cast itself in a favorable statistical light—despite the utter inability of Dr. Kauffman’s analysis to do so.
52. Another example is the claim PREPA made that it has no control of the accounting statements of its wholly-owned subsidiaries.⁵⁰ The idea that a regulated parent would not have the accounting or operational data for a wholly-owned subsidiary is contrary to basic principles of accounting and reporting that underlie all reasonable regulation—whether in the United States or elsewhere.
53. In the end, my catalog of 20 items is an instructive illustration of the kind of obstructive and self-serving behavior that effective utility regulation specifically seeks to avoid. Regulation, as I said at the start of Section 4, is about promoting orderly action. What the prior rate case specifically shows is unrestrained disorder. Responsible regulators cannot work effectively with such an obstructive and self-serving counterparty. A receiver would be a different type of counterparty—and would greatly help by orienting PREPA’s management and operations to be helpful to the process (as utilities in the United States are generally), rather than obstructive.

⁴⁹ PREC Order 2017, pp. 116-21.

⁵⁰ Ibid., pp. 478-79.

54. Ms. Ringelstetter Ennis provides numerous examples of PREPA's mismanagement in her October 3, 2018 and February 25, 2019 declarations. PREPA has a record of mismanaging its generation, transmission, and distribution assets; its human resources; its customer service; its collection practices; its budgeting, financial controls, accounting, and recordkeeping; and, its procurement and contract negotiations.⁵¹ It does not appear that PREPA has meaningfully changed its behavior or processes in recent months.⁵²
55. I provide Exhibit JDM-7 to provide some useful background for the public power agencies used as benchmarks by Ms. Ringelstetter Ennis. These are electric utilities mostly growing out of water developments. But all of them have governing structures that permit the independent issuing of bonds—which permits the financial community to assess for themselves their stability and creditworthiness. Indeed, it is useful to compare the number of CEOs for these companies over the past 10 years compared to the number for PREPA. Quite evidently, the benchmark group supports stable management, while PREPA does not.

6. Receivership Is a Solution for PREPA's Current Operation and any Upcoming P3 Tender

56. Many governments in Latin America (and elsewhere, including Puerto Rico and states in the U.S.) use Public-Private Partnerships ("P3s") to construct more infrastructure—"long-term contracts between a private party and the government for a public asset or service, where the private party bears risk and management responsibility and remuneration is linked to performance."⁵³ The best P3 examples from Latin America show great transparency and a careful assessment of various risks to place upon P3 concessionaires—or not.
57. Chile provides an example of a country with a long history of build-operate-transfer ("BOT") concessions arrangements. It presents a useful example as it is one of the most transparent, sophisticated, yet straightforward, P3 concession models. The transparency of the Chilean model, the careful assessment of the various sorts of risk and the flexibility in

⁵¹ Ringelstetter Ennis Decl., Section III.

⁵² See generally Supp. Ringelstetter Ennis Decl.

⁵³ World Bank Group (2014). "Module 1 PPP Basics – What and Why" Public Private Partnerships Reference Guide Version 2.0 PPP Knowledge Bank, pp. 17-18.

dealing franchise lengths are illustrations of how best to invite investor capital to fund essential facilities and public services. A receiver at PREPA would pursue the varied critical elements of a successful P3 concession (accounting, governance, intersection with other agencies, etc.).

58. As a useful example, Chile implemented its P3 concession program in 2018 to build a new terminal at its principal airport in Santiago.⁵⁴ This P3 privatization is simply part of a successful program under its 1991 concessions law, which lessened government financing for the growing burdens on its infrastructure.⁵⁵ Between 1995 and 2008, Chile awarded 55 concessions, totaling an investment of \$11.5 billion, with more than 120 private companies participating in the projects that included concessions for airports, seaports, roads, and prisons.⁵⁶
59. Chile has adopted a number of innovative ways to lessen the risk of its P3 concessionaries. One is the “Least Present Value of Revenue” or “LPVR” method of awarding concessions, which means that the winning bidder is the one that requires the least amount of revenue to recover costs and earn a profit—something that Puerto Rico may well consider useful for its P3 concession for PREPA—which would be served by the transparency and internal process at PREPA that a receiver would reasonably impose. Another risk-reducing method is the duration of the concession, which ends only when the present value of the toll revenues equals the original bid, allowing for flexibility in end date and a specified return on investment. The flexibility ensures that the value of the concession is less dependent on demand projections and fluctuations.⁵⁷ A third method is demonstrated by Chile’s use of a unique currency for bidding purposes, called an indexed unit of account. While not true money as it is not a medium of exchange (nor does it have a physical embodiment), an

⁵⁴ “Sacyr wins its first airport concession in Chile: el Tepual in Puerto Montt,” Sacyr, April 4, 2018.

⁵⁵ The concessions law was amended in 1993, 1996, and 2010. See Hill, A. (2011). “Foreign Infrastructure Investment in Chile: The Success of Public-Private Partnerships through Concessions Contracts,” *Northwestern Journal of International Law & Business* 32:1, pp. 165, 173-175, 177, 179.

⁵⁶ *Ibid.*, pp. 166, 175-176.

⁵⁷ *Ibid.*, p. 188-189. Also see Engel, E., R. Fischer, and A. Galetovic (2001). “Least-Present-Value-of Revenue Auctions and Highway Franchising,” *Journal of Political Economy* 109:5, 993-1020.

indexed unit of account is useful to facilitate transactions because it is adjusted daily for inflation using Chile's (or whichever relevant jurisdiction's) consumer price index.⁵⁸

60. Such elements of Chile's P3 concessions have lowered risks, reduced payments for the use of infrastructure assets, and provided needed private capital for the construction of its various sorts of infrastructure projects.

61. My reference to Chile's experience is merely an illustration of how a well-run P3 program can deal with risks to encourage better bids—both for increased funds for the government infrastructure owners and for better service and lower fees for consumers. To be sure, however, the P3 program designed for PREPA is vastly more complicated than that for Chile's airport or road projects (or the various P3 projects that Puerto Rico has already undertaken, such as its airport, roads, a ferry, etc.). Public utility enterprises are more complicated than those transport enterprises in their operations, interactions with consumers, and need for constant upgrading and evolution—even without considering the restructuring of the industry (i.e., competitive generation, microgrids and new fuel sources). The Executive Director of Puerto Rico's P3 authority, Mr. Omar Marrero, himself said, “[i]t is worth noting this would basically be the largest transaction in United States history related to the privatization of a public utility company.”⁵⁹ For such a transaction, the market participants will need more transparency, certainty in regulatory interactions, and assurances of independence from the political intervention that PREPA now displays.⁶⁰ Receivership for PREPA, in my opinion (and having seen many privatizations around the world) is the best path for providing what those participants need for the PREPA P3 transaction. It is my opinion that, with current management, PREPA would not be able to successfully achieve its transformation and privatization objectives.

⁵⁸ Shiller, R. J. (2002). “Indexed Units of Account: Theory and Assessment of Historical Experience” in *Indexation, Inflation, and Monetary Policy* ed. Fernando Lefort and Klaus Schmidt-Hebbel, Santiago, Chile, Central Bank of Chile, p. 105.

⁵⁹ “P3 Authority Aiming to launch PREPA privatization RFPs in November,” Reorg Research, Inc., October 8, 2018.

⁶⁰ Supp. Ringelstetter Ennis Decl., Section V.

7. Conclusions

62. In dealing with PREPA, the Court is facing a highly unique problem in a U.S. jurisdiction—a utility that conformed neither to the normal standards of investor-owned regulated utilities nor to the standard of those publicly-owned, but responsibly governed and managed, electricity companies that I have documented in this Declaration.
63. Rather, PREPA exists among the kind of ineffectively-governed and inefficient utilities that were the subject of the wave of privatizations in Latin America and around the world starting in the 1980s—a wave that bypassed Puerto Rico.
64. In coming to grips with PREPA's problems, a receiver would be uniquely capable of imposing administrative, accounting, financial, organization and reporting standards consistent with the institutional models that have long been used in the United States to govern and operate electric utilities effectively.
65. PREPA's conduct, historically and through the present, including in its ongoing regulatory proceeding, evidences obstructive and self-justifying behavior consistent with an enterprise strongly resisting objective scrutiny or regulatory control.
66. As is evidently the case with the application of receivers in other industrial settings, it is my opinion that a receiver for PREPA could most quickly organize the company to protect and advance the interests of all of PREPA's stakeholders.

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I declare under penalty of perjury that the foregoing facts are true and correct. I reserve the right to modify or supplement any of my opinions in this report in light of any new information, including submissions by any other experts, that becomes available to me.

A handwritten signature in black ink, appearing to read "Jeff D. Makholm". The signature is fluid and cursive, with a large initial "J" and "M".

Jeff D. Makholm, Ph.D.

February 25, 2019